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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/302,687	04/29/1999	DAVID I DIETZ	9076/102	7243

7590

07/10/2003

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EXAMINER

ALI, SYED J

ART UNIT

PAPER NUMBER

2127

DATE MAILED: 07/10/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/302,687

Applicant(s)

DIETZ ET AL.

Examiner

Syed J Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office action is in response to Amendment A, paper number 10, which was received April 30, 2003. Applicant's arguments have been fully considered but they deemed to be moot in view of the new ground of rejection. Claims 1-17 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this Office action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-8, 12-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Coronel et al. (USPN 6,363,294) (hereinafter Coronel) (see PTO-892 of previous Office action).

As per claim 1, Coronel discloses an event historian for batch processing comprising:

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a history executive element for receiving event information from multiple input sources operating in different physical elements of a process and for deriving relationships among portions of said event information based on the interaction of the physical elements (col. 14 line 56 – col. 15 line 12, “Fig. 16 depicts flow chart referenced 58 which summarizes at a high level the construction of the wafer history for each wafer of the batch”, wherein the wafer history is constructed by taking measurements relating to the operation and interaction of the physical elements of the wafer construction process);

a storage element coupled to said executive element for persistently storing said event information and relationships in response to requests from said history executive element (col. 13 lines 19-62, “Database 46 thus includes...the evolution of the selected process parameters in normal operating conditions and in the identified deviations thereof”); and

an event information retrieval element for retrieving said event information in accordance with said relationships in response to requests from an application process (col. 9 line 63 – col. 10 line 46, “Supervisor 35 includes an internal database, however it should be understood that an external database could be used instead”, wherein the supervisor can retrieve information from the database pertaining to a specific batch).

As per claim 2, Coronel discloses the event historian of claim 1 further comprising:

a continuous data collection element for gathering continuous data in real time wherein said continuous data relates to at least one procedural element of a batch process

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(col. 9 line 63 – col. 10 line 46, “Measurement results are transmitted in real-time to supervisor 35”).

As per claims 3 and 4, Coronel discloses the event historian wherein said information retrieval element further comprises:

a batch historian view client application for graphically presenting to a user said event information and said relationships and said continuous data (Figs. 8-13, wherein plots of various measurements taken in real-time are presented to the user, and these plots could be changed to monitor any specific signal or combination of signals).

As per claim 5, Coronel discloses the event historian of claim 1 further comprising:

a batch event generator coupled to said history executive element as a first input source wherein said batch event generator generates events indicative of execution of procedural elements of a batch process (Fig. 7, element 17”, wherein the measurement unit creates alarm signals that indicate if an error in the batch process has occurred, thereby generating events to the supervisor indicative of any sort of failure of the process); and

a process event generator coupled to said history executive element as a second input source wherein said process event generator generates events indicative of procedural elements performed within equipment used in the control of said batch process (Fig. 7 elements 14-1 and 14-2, wherein the end point controllers depicted

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monitor the execution process and take measurements as the process continues procedurally, indicated by the various steps in elements 11-1 and 11-2 of Fig. 7).

As per claim 6, Coronel discloses the event historian of claim 5 further comprising:

a continuous data collection element for gathering continuous data in real time wherein said continuous data relates to at least one procedural element of a batch process (col. 9 line 63 – col. 10 line 46, “Measurement results are transmitted in real-time to supervisor 35”),

wherein said process event generator comprises:

an event log generated by said continuous data collection element (col. 13 lines 19-62, “Database 46 thus includes...the evolution of the selected process parameters in normal operating conditions and in the identified deviations thereof, the analysis rules with their associated rejection criteria...and finally, the alert codes and the actions to be undertaken that are assigned to each deviation”).

As per claim 7, Dentler discloses the event historian of claim 6 wherein said history executive element includes:

a history correlation element for relation said batch events and said process events and said continuous data (col. 10 line 49 – col. 11 line 16, “for each potential cause of wafer rejection based on expert information, the same process parameters...are monitored to understand their drifts with respect to the reference evolution mentioned above”, wherein there is stored within the database a component referred to as “batch

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statistics” that is used to analyze the relationship between the measurement data and previous established criteria).

As per claim 8, Coronel discloses a method for use in a batch processing system, a batch history view client application comprising:

means for retrieving event information from multiple sources operating in different physical elements of a process corresponding to an identified batch (Fig. 7 elements 17'-1, 17'-2, and 17", wherein the measurement units monitor the production of a wafer at various points in its production); and

means for visually presenting to a user said event information and relationships among portions of said event information (Figs. 8-13, wherein plots of various measurements taken in real-time are presented to the user, and these plots could be changed to monitor any specific signal or combination of signals).

As per claim 12, Coronel discloses the view client of claim 8 further comprising:

means for retrieving other event information corresponding to a second identified batch (col. 10 line 50 – col. 11 line 16, “For each step, the process parameters that are determining for the monitoring of this step are selected. They are monitored to establish the set of correct process data, corresponding to the normal situation”, wherein the second identified batch is identified as the “normal situation” and is used for comparing the current production parameters of the corresponding step); and

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means for presenting to a user said other event information and relationships among portions of said other event information wherein said means for presenting said other event information includes:

means for indicating differences between said event information and said other event information (col. 10 line 50 – col. 11 line 16, “for each potential cause of wafer rejection based on expert information, the same process parameters...are monitored to understand their drifts with respect to the reference evolution”, wherein the deviations from the normal situation is indicated by alarm signals as potential causes of rejection of that batch).

As per claim 13, Coronel discloses the view client of claim 12 wherein said other event information represents processing of a golden batch for comparison with other batches by said event information (col. 10 line 50 – col. 11 line 16, “For each step, the process parameters that are determining for the monitoring of this step are selected. They are monitored to establish the set of correct process data, corresponding to the normal situation”, wherein the normal situation is analogous to a golden batch, in that it is a batch that is known to be fully functional).

As per claim 14, Coronel discloses the view client of claim 12 wherein said means for visually presenting includes means for presenting said event information and said relationships in real time as said event information is generated (Figs. 8-13, wherein data points are updated on the chart as they occur in real-time for the purpose of supervising the production).

As per claim 15, Coronel discloses the view client of claim 14 wherein said means for presenting said event information in real time includes means for scrolling said event information horizontally across a user display screen (Figs. 8-13, wherein time progresses from left to right across the user display screen, as claimed).

As per claim 16, Coronel discloses the view client of claim 14 further comprising:
continuous data collection means for gathering continuous data in real time wherein said continuous data relates to at least one data point of a batch process (Fig. 7 elements 17'-1, 17'-2, 17'', wherein the measurement units relay data to the supervisor in real time),

wherein said means for presenting said event information in real time includes means for presenting said continuous data in real time as said continuous data is gathered (Figs. 8-13, wherein the data charts present the collected data in real time in comparison to normal conditions).

As per claim 17, Coronel discloses the view client of claim 16 wherein said means for presenting said continuous data in real time includes means for scrolling said event information horizontally across a user display screen (Figs. 8-13, wherein time progresses from left to right across the user display screen, as claimed).

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3. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coronel.

As per claim 9, Coronel does not specifically disclose the view client of claim 8 wherein said means for visually presenting further comprises:

means for presenting said event information and said relationships as a Gantt chart wherein said Gantt chart is representative of procedural elements of the batch procedure.

“Official Notice” is taken that the use of Gantt charts are well known and expected in the art. Specifically, in the monitoring of a production process, Gantt charts are commonly used to monitor the progress of the production. It would have been obvious to one of ordinary skill in the art to use a Gantt chart to represent the progress of production of a wafer, as in Coronel, since it would allow the supervisor to easily determine where the wafer production process is in its procedure of production, as well as comparing it to previous batches for purposes of monitoring deviation.

As per claim 10, Coronel disclose the view client of claim 9 wherein said means for presenting said event information and said relationships as a Gantt chart further comprises:

means for presenting said Gantt chart in an absolute time scale (Figs. 8-13, wherein the horizontal axis of the chart indicates the time scale in real-time, and since it is derived from the absolute time of the production process, could easily be altered to indicate the absolute time, as claimed).

As per claim 11, Coronel discloses the view client of claim 9 wherein said means for presenting said event information and said relationships as a Gantt chart further comprises:

means for presenting said Gantt chart in a batch relative time scale (Figs. 8-13, wherein the horizontal axis of the chart indicates the time evolved in a batch relative time scale, where $t(0)$ is when the process starts).

Response to Arguments

4. Applicant argues on page 6, "*Dentler et al. does not suggest or disclose, at any level, an event historian or a batch history application for receiving event information from multiple sources operating in different physical elements of a process, much less deriving or displaying a relationship, of any kind, between this data.*"

It is noted that Dentler does in fact monitor batch processing within a mainframe computer or a distributed system, rather than physical processes. However, as discussed above, Coronel does disclose an event historian for monitoring of a physical process, specifically the physical production of a semiconductor wafer. Additionally, Coronel derives relationships between these processes based on an internal database, and various measurement tools that are coupled to a supervisor tool receive the data.

Based on a reading of the claims as originally filed, it is not completely clear that the event historian is intended to only monitor physical elements of a process. The claims, as amended, do indicate that the event historian should collect data from physical

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elements of a process. It is believed that Coronel sufficiently meets the limitations of the claims as presently set forth.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A Grant can be reached on (703) 308-1108. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Syed Ali
July 7, 2003



MAJID BANATKHAH
PRIMARY EXAMINER